

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

REC'D 30 JUL 2004

WIPO PCT

Applicant's or agent's file reference P 63414	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEAA16)	
International application No. PCT/EP 03/05332	International filing date (day/month/year) 21.05.2003	Priority date (day/month/year) 24.05.2002
International Patent Classification (IPC) or both national classification and IPC F27D21/00		
Applicant SPECIALTY MINERALS MICHIGAN INC.		

- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 5 sheets, including this cover sheet.
 - ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

EPO - DG 1



These annexes consist of a total of sheets.

23 09. 2004

- This report contains indications relating to the following items:

(36)

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 22.12.2003	Date of completion of this report 29.07.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tlx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer González-Junquera, J Telephone No. +49 89 2399-7445 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/EP 03/05332**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-8 as originally filed

Claims, Numbers

1-15 as originally filed

Drawings, Sheets

1/3-3/3 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently-furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-15
	No: Claims	
Inventive step (IS)	Yes: Claims	1-15
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-15
	No: Claims	

2. Citations and explanations

see separate sheet

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Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement.

1. The application refers to a method for repairing the protective lining of a reaction or transport vessel. The method comprises the following steps (with the terminology of the description).
 - (i) "binarization": identifying areas with lining thickness below a given threshold, and mapping them and assigning them a value in a binary code (the other value in the binary code goes to the areas with thickness above the threshold) in an abstract model representing the furnace.
 - (ii) "defragmentation": combining isolated areas marked with the binary code corresponding to "thickness below threshold" into bigger areas ("combined areas" in the terminology of the application), and assigning a binary code "to be repaired", or "not to be repaired" to these bigger areas.
 - (iii) "sequencing": computing and establishing a repair sequence of the "combined areas" marked with the binary code "to be repaired" (e.g. assigning them consecutive numbers representing the repairing order).
2. Reference is made to the following documents:

D1: US-A-4 107 244
D2: US 2002/158368 A1
3. D1, which discloses a method of repairing the damaged portion of the lining of a refractory vessel (e.g. torpedo or converter) is considered to represent the closest prior art. D1 uses a profile measuring device, and uses the mapped difference between the real profile and the reference profile in the different points of the lining surface for activating and controlling a gunning device, when that difference is bigger than a given repair threshold.

Step (i), although not explicitly disclosed in D1, would be considered by the skilled person reading D1 col. 5, lines 17-26 (when the difference between the reference and the actual thickness is greater than a threshold, the difference is passed to a controller) as an inherent feature of D1 (if the difference is greater than the

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threshold, the system activates, otherwise, it does not).

Steps (ii) and (iii) are not disclosed in D1. These steps allow an abstract manipulation of the results of step (i), resulting in higher flexibility (for instance, by adjusting the defragmentation and sequencing algorithms different kinds of repairs can be done).

D2 does not disclose steps (ii) and (iii), either.

Steps (ii) and (iii), in combination with step (i) and the rest of the features of claim 1 are neither disclosed nor hinted at in any available piece of prior art. Novelty and inventive step, as well as the industrial applicability of the subject-matter of claim 1 are acknowledged. The rest of the claims are dependent claims.